SPECIAL QUALITY, SHOCK AND VIBRATION RESISTANT TETRODE, nuvistor type

HEATING

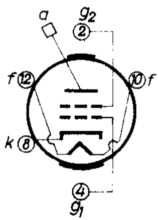
Indirect by A.C. or D.C.; parallel supply

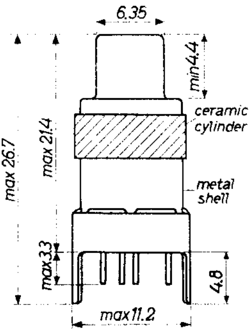
Heater voltage V_f = 6.3 V

Heater current I_f = 150 mA

Dimensions in mm

Base: TWELFAR 5 pin





LIMITING VALUES (Absolute limits)

Anode voltage in cold condition	V_{ao}	= max.	330 V
Anode voltage	V_a	= max.	250 V
Anode dissipation	W_a	= max.	2.2 W
Grid No.2 voltage in cold condition	V_{g2o}	= max.	330 V
Grid No.2 voltage	V_{g2}	= max.	110 V
Grid No.2 dissipation	W_{g2}	= max.	0.2 W
Negative grid No.1 voltage	$-V_{g1}$	= max.	55 V
Peak positive grid No.1 voltage	$+V_{g1\,p}$	= max.	2 V
Grid No.1 current	I_{g1}	= max.	2 mA
External grid No.1 resistance with fixed bias	R_{g1}	= max.	0.5 MΩ
External grid No.1 resistance with automatic bias	R_{g1}	= max.	1.0 MΩ
Cathode current	I_k	= max.	20 mA
Peak voltage between heater and cathode	$V_{kf\,p}$	= max.	100 V
Shell temperature	t_{bulb}	= max.	150 °C
Altitude		any	

CHARACTERISTICS

Column I: Setting of the tube and average measuring results of new tubes

II: Characteristics range values for equipment design

Heater current		I	II	
Heater voltage	V_f =	6.3		V
Heater current	I_f =	150	140-160	mA

Capacitances		I	II	
Anode to grid No.1	C_{ag_1} =	0.01	0.009-0.011	pF
Grid No.1 to all other elements except anode	C_{g_1} =	6.5	6.0-7.0	pF
Anode to all other elements except grid No.1	C_a =	1.4	1.2-1.6	pF
Cathode to heater	C_{kf} =	1.4	1.1-1.7	pF

Typical characteristics		I	II	
Heater voltage	V_f =	6.3		V
Anode supply voltage	V_{ba} =	125		V
Grid No.2 supply voltage	V_{bg_2} =	50		V
Cathode resistor	R_k =	68		Ω
Anode current	I_a =	10	8.5-11.5	mA
Grid No.2 current	I_{g_2} =	2.7	1.8-3.6	mA
Internal resistance	R_i =	0.2		MΩ
Mutual conductance	S =	10.6	9.0-12.2	mA/V[1])

Cut-off voltage		I	II	
Heater voltage	V_f =	6.3		V
Anode voltage	V_a =	125		V
Grid No.2 voltage	V_{g_2} =	50		V
Anode current	I_a =	10		µA
Negative grid No.1 bias	$-V_{g_1}$ =	4.5		V

[1]) Mutual conductance at underheating (V_f = 5.7 V) = min. 8.0 mA/V
Decrease of mutual conductance by underheating (V_f = 6.3 V→5.7 V) = max. 20 %

CHARACTERISTICS (continued)

Grid current

		I	II	
Heater voltage	V_f	= 6.3		V
Anode voltage	V_a	= 200		V
Grid No.2 voltage	V_{g2}	= 70		V
Grid No.1 supply voltage	V_{bg1}	= -1.6		V
Grid No.1 resistor	R_{g1}	= 0.5		MΩ
Negative grid No.1 current	$-I_{g1}$	=	< 0.1	μA

Insulation

		I	II	
Heater voltage	V_f	= 6.3		V
Voltage between heater and cathode	V_{kf}	= 100		V
Heater to cathode current	I_{kf}	=	< 5	μA

		I	II	
Heater voltage	V_f	= 6.3		V
Voltage between grid No.1 and all other electrodes + metal shell	$V_{g1-(a+g2+k+s)}$	= 100		V
Insulation resistance between grid No.1 and all other electrodes + metal shell	$R_{g1-(a+g2+k+s)}$	=	> 500	MΩ

		I	II	
Heater voltage	V_f	= 6.3		V
Voltage between anode and all other electrodes + metal shell	$V_{a-(g2+g1+k+s)}$	= 300		V
Insulation resistance between anode and all other electrodes + metal shell	$R_{a-(g2+g1+k+s)}$	=	> 500	MΩ

		I	II	
Heater voltage	V_f	= 6.3		V
Voltage between grid No.2 and all other electrodes + metal shell	$V_{g2-(a+g1+k+s)}$	= 100		V
Insulation resistance between grid No.2 and all other electrodes + metal shell	$R_{g2-(a+g1+k+s)}$	=	> 500	MΩ

CHARACTERISTICS (continued)

Vibrational noise output

Heater voltage	V_f	=	6.3	V
Anode supply voltage	V_{ba}	=	125	V
Grid No.2 supply voltage	V_{bg_2}	=	50	V
Cathode resistor	R_k	=	68	Ω
Cathode capacitor	C_k	=	1000	µF
Anode resistor	R_a	=	2	kΩ
Vibrational acceleration	a	=	1	g
Vibrational frequency	f	=	50-6000	c/s
Noise output	V_o	=		< 35 mV
Vibrational frequency	f	=	6-15	kc/s
Noise output	V_o	=		< 500 mV

Shock resistance: 1000 g [1]

20 shocks as produced by the NRL impact machine, lifting the hammer over an angle of 60°

Vibration resistance: 2.5 g [1]

Vibrational acceleration of 2.5 g during 48 hours at a frequency of 60 c/s

[1] The specified conditions are test conditions for evaluation of the ruggedness of the tube and should not be interpreted as suitable operating conditions

PHILIPS

Electronic Tube

HANDBOOK

5787

page	**sheet**	**date**
1	1	1962.07.07
2	2	1962.07.07
3	3	1962.07.07
4	4	1962.07.07
5	FP	1999.12.30